

AT BREAK

Structured Mode Syntax

```
[AT] BREAK [(r)] [OF] operand1 [/n']
      statement...
END-BREAK
```

Reporting Mode Syntax

```
[AT] BREAK [(r)] [OF] operand1 [/n']
      {
        statement
      DO statement... DOEND
      }
```

Operand	Possible Structure					Possible Formats												Referencing Permitted	Dynamic Definition
Operand1		S				A	N	P	I	F	B	D	T	L				yes	no

Note:

Dynamic or large variables are not allowed to be used as Operand1.

Related Statements: BEFORE BREAK PROCESSING | FIND | READ | HISTOGRAM | SORT | READ WORK FILE

Function

The AT BREAK statement is used to cause the execution of one or more statements whenever a change in value of a control field occurs. It is used in conjunction with automatic break processing and is available with the following statements: FIND, READ, HISTOGRAM, SORT, READ WORK FILE.

An AT BREAK statement block is only executed if the object which contains the statement is active at the time when the break condition occurs.

It is possible to initiate a new processing loop within an AT BREAK condition. This loop must also be closed within the same AT BREAK condition.

This statement is non-procedural (that is, its execution depends on an event, not on where in a program it is located).

Reference Notation - r

By default, the final AT BREAK condition (for loop termination) is always related to the outermost active processing loop initiated with a FIND, READ, READ WORK FILE, HISTOGRAM or SORT statement.

With the notation "(r)" you can relate the final break condition of an AT BREAK statement to another specific currently open processing loop (that is, the loop in which the AT BREAK statement is located or any outer loop).

Example:

```

0110 ...
0120 READ ...
0130   FIND ...
0140     FIND ...
0150       AT BREAK ...
0160         FIND ...
0170           END-FIND
0180             END-BREAK
0190               END-FIND
0200                 END-FIND
0210   END-READ
0220 ...

```

In this example, the final AT BREAK condition is related to the READ loop initiated in line 0120. It would be possible to have it related to one of the FIND loops initiated in line 0130 and 0140, but not to the one initiated in line 0160.

If "(r)" is specified for a break hierarchy, it must be specified with the first AT BREAK statement and applies also to all AT BREAK statements which follow.

Control Field - operand1

The field used as the break control field is usually a database field. If a user-defined variable is used, it must be initialized prior to the evaluation of automatic break processing (see BEFORE BREAK PROCESSING statement).

/n/

The notation "/n/" may be used to indicate that only the first n positions of the control field are to be checked for a change in value. This notation can only be used with operands of format A, N or P.

A specific occurrence of an array can also be used as a control field.

A control break occurs when the value of the control field changes, or when all records in the processing loop for which the AT BREAK statement applies have been processed.

Example 1

```

/* EXAMPLE 'ATBEX1S': AT BREAK (STRUCTURED MODE)
/*****
1 EMPLOY-VIEW VIEW OF EMPLOYEES
  2 CITY
  2 COUNTRY
  2 NAME
END-DEFINE
/*****
LIMIT 10
READ EMPLOY-VIEW BY CITY
  AT BREAK OF CITY
    SKIP 1
  END-BREAK
  DISPLAY NOTITLE CITY (IS=ON) COUNTRY (IS=ON) NAME
END-READ
/*****
END

```

CITY	COUNTRY	NAME
AIKEN	USA	SENKO
AIX EN OTHE.	F	GODEFROY
AJACCIO		CANALE
ALBERTSLUND	DK	PLOUG
ALBUQUERQUE	USA	HAMMOND ROLLING FREEMAN LINCOLN
ALFRETON	UK	GOLDBERG
ALICANTE	E	GOMEZ

Equivalent reporting-mode example: See program ATBEX1R in library SYSEXRM.

Example 2

```

/* EXAMPLE 'ATBEX2': AT BREAK USING /N/ NOTATION
/*****
DEFINE DATA LOCAL
  1 EMPLOY-VIEW VIEW OF EMPLOYEES
  2 DEPT
  2 NAME
END-DEFINE
/*****
LIMIT 10
READ EMPLOY-VIEW BY DEPT STARTING FROM 'A'
  AT BREAK OF DEPT /4/
    SKIP 1
  END-BREAK
  DISPLAY NOTITLE DEPT NAME
END-READ
/*****
END

```

DEPARTMENT CODE	NAME
-----	-----
ADMA01	JENSEN
ADMA01	PETERSEN
ADMA01	MORTENSEN
ADMA01	MADSEN
ADMA01	BUHL
ADMA02	HERMANSEN
ADMA02	PLOUG
ADMA02	HANSEN
COMP01	HEURTEBISE
COMP01	TANCHOU

System Functions

Natural system functions may be used in conjunction with an AT BREAK statement as described in section System Functions of the Natural Reference documentation.

Multiple Break Levels

Multiple AT BREAK statements may be specified within a processing loop within the same program module. If multiple BREAK statements are specified for the same processing loop, they form a hierarchy of break levels independent of whether they are specified consecutively or interspersed within other statements. The first AT BREAK statement represents the lowest control break level, and each additional AT BREAK statement represents the next higher control break level.

Every processing loop in a loop hierarchy may have its own break hierarchy attached.

Example - Structured Mode:

```
FIND ...
  AT BREAK
  ...
  END-BREAK
  AT BREAK
  ...
  END-BREAK
  AT BREAK
  ...
  END-BREAK
END-FIND
...
```

Example - Reporting Mode:

```
FIND ...
  AT BREAK
  DO
  ...
  DOEND
  AT BREAK
  DO
  ...
  DOEND
...
```

A change in the value of a control field in a break level causes break processing to be activated for that break level and all lower break levels, regardless of the values of the control fields for the lower break levels.

For easier program maintenance, it is recommended to specify multiple breaks consecutively.

Example 3

```

/* EXAMPLE 'ATBEX5S': AT BREAK WITH MULTIPLE BREAK LEVELS
/*
/* (STRUCTURED MODE)
/* *****
DEFINE DATA LOCAL
1 EMPLOY-VIEW VIEW OF EMPLOYEES
  2 CITY
  2 DEPT
  2 NAME
  2 LEAVE-DUE
1 LEAVE-DUE-L (N4)
END-DEFINE
/* *****
LIMIT 5
FIND EMPLOY-VIEW WITH CITY = 'PHILADELPHIA' OR = 'PITTSBURGH'
      SORTED BY CITY DEPT
      MOVE LEAVE-DUE TO LEAVE-DUE-L
      DISPLAY CITY (IS=ON) DEPT (IS=ON) NAME LEAVE-DUE-L
        AT BREAK OF DEPT
          WRITE NOTITLE /
            T*DEPT OLD(DEPT) T*LEAVE-DUE-L SUM(LEAVE-DUE-L) /
        END-BREAK
        AT BREAK OF CITY
          WRITE NOTITLE
            T*CITY OLD(CITY) T*LEAVE-DUE-L SUM(LEAVE-DUE-L) //
        END-BREAK
END-FIND
/* *****
END

```

CITY	DEPARTMENT CODE	NAME	LEAVE-DUE-L

PHILADELPHIA	MGMT30	WOLF-TERROINE	8
		MACKARNESS	12
	MGMT30		20
	TECH10	BUSH	8
		NETTLEFOLDS	7
	TECH10		15
PHILADELPHIA			35
PITTSBURGH	MGMT10	FLETCHER	3
	MGMT10		3
PITTSBURGH			3

Equivalent reporting-mode example: See program ATBEX5R in library SYSEXRM.